From Now to Net-Centric
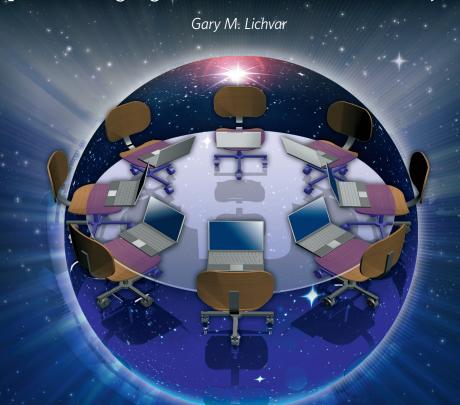
How an Army IT Organization Repositioned Itself to Support Changing Defense Priorities and Objectives

Gary M. Lichvar

E volving national defense priorities and increased competition for defense technology funding is driving many military information technology organizations to restructure in order to eliminate redundancies, increase operational efficiencies and effectively meet customers' demands for rapid delivery of improved capabilities.

A case in point is the Army's Software Engineering Center at Fort Lee (SEC-Lee), Va., which has successfully reinvented itself

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Lichvar *is the director, Business Mission Area at the U.S. Army CECOM Life Cycle Management Command, Software Engineering Center. He has over 28 years of experience in software development, acquisition, and project management with Army IT organizations.*

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as one of the Army's key sustainment and system management facilities. SEC-Lee stands as a good example of an IT organization that has leveraged its expertise, manpower, and capabilities in new and effective ways.

Formerly a primary provider of tactical software development and support for the Army, SEC-Lee has just assumed responsibility for ongoing sustainment and management of all the Army's retail-level logistics and maintenance systems—collectively known as the Standard Army Management Information System—which process transactions valued at over $68 billion annually. In essence, all the ammunition, equipment, parts, maintenance, and supplies that the Army needs to function in both peace and war are requisitioned, processed, and tracked by STAMIS.

SEC director, Ned Keeler, noted that the SEC-Lee restructuring exemplifies transformation occurring throughout his organization as well as many other military IT organizations. "We cannot remain static and expect to keep pace with technological advancements and changing defense priorities," Keeler said. "Through new partnerships with industry and academia, improved business practices, and the reorganization and consolidation of programs and resources to improve effectiveness, all Army IT organizations seek to maximize their efficiency and contributions to mission objectives," he added.

[Note: Mention of industry organizations in this article does not constitute endorsement by the U.S. Army or Department of Defense.]

Necessity is the Mother of Reinvention

The increased focus on sustainment activities at SEC-Lee came about because SEC leadership recognized the opportunity to achieve greater efficiencies for contracting efforts, testing facilities, information assurance, and customer support by consolidating responsibility for all the STAMIS systems under SEC-Lee. This coincides with a general reallocation of IT resources to align with changing operational priorities (such as less emphasis on Future Combat Systems, the pending drawdown in Iraq, increased civil affairs and reconstruction activities, etc.).

> **"We cannot remain static and expect to keep pace with technological advancements and changing defense priorities."**
> **Ned Keeler, SEC director**

With the expertise and resources at its disposal, SEC-Lee is also well positioned to expand its portfolio of sustainment and support programs as program executive offices transition other systems that have achieved full operational capability. "The key to success is to identify programs and organizations with complementary or overlapping knowledge, skillsets, or facilities and accurately calculate the potential costs of restructuring versus the benefits of the shared resources," says Ricky Daniels, director of the Tactical Logistics Directorate at SEC-Lee.

Plans are already under way to transfer management of the Software Integration Lab located at Fort Hood, Texas, and the Systems Integration Facility at Chester, Va., to SEC-Lee, and expand their operations in conjunction with the Federated Labs operations also based at Fort Lee.

Avoiding Capability Gaps

While the actual transition of responsibility for STAMIS from the Program Manager–Logistics Information Systems is now complete, SEC-Lee must continue to successfully execute the support and sustainment mission for these logistics systems.

As historical examples have frequently shown, an effective supply chain can determine the success or failure of military operations. Current combat operations in Iraq and Afghanistan, along with numerous peacekeeping and humanitarian missions, require the Army's logistics and maintenance systems to support extended missions in some of the most remote and austere locations on the globe.

This means soldiers and commanders continue to rely on optimal performance of the existing systems, while also requesting new and improved capabilities to support their missions.

SEC-Lee, however, also faces an added complication. They must simultaneously try to ensure new functionality and technology insertions will not lead to a problematic capability gap between any of their STAMIS systems and the new Global Combat Support System–Army that is currently in development and scheduled to replace STAMIS beginning in 2012. The two systems will then need to co-exist for up to four more years as GCSS-Army is gradually fielded Army-wide.

SEC-Lee leaders' solution is to ensure careful coordination between their organization and GCSS-Army's other key stakeholders: the Program Executive Office–Enterprise Information Systems; Headquarters, Department of the Army, G4; the Army Materiel Command; and the Combined Arms Support Command. Aside from regularly scheduled briefings and updates with key personnel at those organizations, final system requirements issued to SEC-Lee by each STAMIS system's Configuration Control Board are automatically forwarded to GCSS-Army for their reference. In addition, by aligning their technology insertions as closely as possible with GCSS-Army's enterprise architecture framework, the STAMIS systems can more closely match their functionality with the GCSS-Army capabilities, ensuring the transition is as seamless as possible for end-users, with no mission failure or data interruption.

Integrating Commercial Solutions into Existing Systems

With buzz words such as "interoperability," "network-centric," and "enterprise architecture" permeating the Department of Defense's IT mantra for the past decade, any system classified as stovepiped or standalone was liable to be declared obsolete. In many cases, however, existing stovepiped systems are still fulfilling critical mission needs very well and can be effectively updated more quickly and at a lower cost than a complete redesign, while DoD continues to move toward its enterprise goal.

Using technology insertions, SEC-Lee is able to continue updating the various STAMIS systems with a combination of customized development and commercial off-the-shelf products. Taking advantage of several Microsoft®, Oracle®, and Sun Microsystems® operating systems, servers, and database products has reduced the lines of customized code that must be written and facilitated integration of other beneficial commercial products. That

has shortened SEC-Lee's development cycles, and it also brings a level of standardization to the systems that is helping streamline customer support and subsequent upgrades.

Using commercial products and interfaces familiar to end-users helps lower post-fielding training and support requirements when compared to the DOS-based legacy systems. In addition, several of the systems now feature comprehensive, integrated tutorials and computer-based training that give users a self-help option that can supplement or even replace formal training and minimize help desk tickets.

An exponential increase in cyber attacks and attempted intrusions into government systems (up from 6 million in 2006 to more than 300 million in 2008, according to DoD and industry figures) has triggered a corresponding barrage of federal, DoD, and Service-specific cyber security regulations. The time and cost of compliance with these requirements, however, can be significant, particularly where the security measures must be custom designed and painstakingly integrated and managed.

Because the STAMIS systems send more than a billion requisitions annually over unclassified networks, information assurance was a serious concern for the Army. Rather than build data and network security measures for the systems from scratch, SEC-Lee takes advantage of commercial products that are already in compliance with the regulations and standards.

For example, a technology insertion provided significantly greater data security in all the Microsoft® Windows-based STAMIS systems using a readily available commercial product. By integrating secure information exchange products from GlobalSCAPE Inc. of San Antonio, Texas, into both the client and server components of the systems, STAMIS developers ensure the security of all transferred data with significantly less development time and effort.

"Our widely used file transfer products provide the Army with a turnkey solution for their secure data communication needs," said Jim Morris, president and chief executive officer of GlobalSCAPE. "These products utilize industry standard secure protocols and are seamlessly integrated with other STAMIS systems," Morris continued.

The GlobalSCAPE products have also earned federal information processing standards certification and a certificate of networthiness from the Army's Network Enterprise Technology Command, ensuring the systems are in full compliance with federal and Army regulations and standards.

A Total System Engineering Approach

A major reason Army leadership felt SEC-Lee was ideally suited to assume sustainment and support responsibility for the STAMIS logistics and maintenance systems was their personnel's combination of technical expertise and functional logistical knowledge. STAMIS is a very complex family of systems, and the consequences of a failure in any of the supply or maintenance modules could be highly disruptive for Army operations.

SEC-Lee oversees five STAMIS supply and maintenance systems: the Property Book Unit Supply–Enhanced, the Standard Army Maintenance System–Enhanced, the Unit-Level Logistics System–Aviation (Enhanced), the Standard Army Ammunition System–Modernization, and the Standard Army Retail Supply System. Several of the systems are composed of multiple sub-systems. They share data and resources with each other in varying degrees, must interface with a number of outside systems, and also have the flexibility to function effectively in differing levels and types of connectivity. There are currently over 40,000 STAMIS systems in use by more than 120,000 combat service support soldiers worldwide.

In many cases, existing stovepiped systems are still fulfilling critical mission needs very well and can be effectively updated more quickly and at a lower cost than a complete redesign.

One of the major causes of delays, cost overruns, and poor outcomes when designing or updating large-scale systems such as STAMIS is poor management of system complexity. Integrated systems with networked components coexist with various subsystems and present significant challenges to both design and process management. Too often, programs fail because teams cannot clearly delineate functional requirements and show how interdependent components or subsystems affect each other in context of the overall system. One problem is fixed, only to "break" another component elsewhere in the system.

SEC-Lee takes a multifaceted approach to managing the complexity inherent in the ongoing update process

for STAMIS. The fact that many of the SEC-Lee personnel who support the STAMIS systems are former logistics or maintenance specialists with hands-on experience lends them an added ability to effectively and accurately define and interpret the requirements, and then use the right technology to implement the requested capabilities. That helps avoid the unfortunate "Chinese whisper" effect that can result when there is a breakdown of understanding or communication somewhere in the process.

SEC-Lee System Manager for Property Book Unit Supply–Enhanced Pablo Brown believes one of their most important strategies is to ensure design requirements are well articulated and have clear relevance to the stated operational objectives. "We work collaboratively with the combat developers and configuration control boards as early as possible in the process of each update cycle to ensure that functional objectives are clearly supported by the technical solutions we ultimately employ," Brown stated. "It is equally important that all requirements are worded unambiguously before we even pass them on to the developers."

Seemingly simple revisions to a requirement's verbiage can make all the difference in ensuring its full intent is ultimately met and soldiers get the capabilities they need on time. Waiting until the validation and testing stages to assess whether the technology serves the functional objectives would not leave adequate time or funding for anything other than minor course corrections. In the worst-case scenario, a problem at this point could cause major delays and cost overruns as developers and project managers go back to the drawing board.

Instead, SEC-Lee applies a variety of process improvement and quality assurance tools throughout the course of a project to verify progress and help assure successful outcomes. These tools range from Capability Maturity Model Integration assessments and proof-of-principle analysis, to back-to-basics techniques such as code spot checks.

Successfully Managing Contractor Relationships

Establishing clear lines of communication and carefully managing relationships with contracted developers and integrators produces measurable results, as evidenced by the major Standard Army Maintenance System–Enhanced (SAMS-E) modernization project that was fielded on schedule and under budget, with a 99 percent pass rate on critical tasks during government user acceptance testing.

McLane Advanced Technologies of Temple, Texas, was the lead systems integrator for the SAMS-E modernization project and continues to provide ongoing development and support services. This project merged and updated three legacy maintenance systems to include a Windows operating system, graphical user interface, real-time automation of key functions, and an array of new and improved features that improve efficiency and leadership oversight of various maintenance activities.

Effective two-way communication built high levels of trust between government personnel and McLane's developers when working on the SAMS-E project. That enabled both sides to go beyond contractually specified requirements and quality assurance measures.

"The Army gave us full access to the legacy systems, which allowed our analysts to develop requirements based on current functionality and avoid capability gaps," said Cathy Blurton, director of military development services at McLane. "In turn, our developers provided the Army's materiel developer and combat developer with live demonstrations of SAMS-E during the development life cycle so they had the ability to review it and address any issues early," Blurton added.

The SAMS-E team remains focused on quality assurance and are now preparing to conduct onsite training and a proof-of-principle assessment for U.S. Army installations in Europe, in order to optimize the configuration parameters to best meet their specific structure and needs.

Doing Better with Less

SEC-Lee's transformation into a successful sustainment and support organization is achieving greater efficiencies while delivering force multipliers to soldiers around the world. At a time when almost all DoD organizations are being asked to do more with less, these examples of cost reduction, increased efficiency, and improved performance are best practices from which many other IT organizations can learn.